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Effects of Climate Change on Energy Production and Use in the United States

Public Review Comments on the Draft Prospectus for Synthesis and Assessment Product 4.5

Comments received from
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General Comments

Ameren understands that the Synthesis and Assessment Product ("SAP") 4.5 has been added to the original 21 SAPs developed as part of the Climate Change Science Program's ("CCSP") Strategic Plan. However, we are concerned that the draft Prospectus is rather negative as to what is available from various sources to produce a credible and worthwhile SAP 4.5. The CCSP guidelines say that the SAPs will support "informed discussion and decisions by policy-makers, resource managers stakeholders, the media, and the general public," and "help define and set the future direction and priorities" of the CCSP Program. If the available sources are not available to meet the guidelines, then how will SAP 4.5 be able to provide the future direction and set priorities? Has the survey and assessment of the available literature been fully reviewed considering the short time since the decision to develop this document? Is there some additional mechanism to develop the appropriate documentation to enable SAP 4.5 to meet the guidelines of the CCSP and if not should the SAP proceed without that information?

First General: I was not able to participate in any of the stages that led to this prospectus and am therefore submitting some comments during this public review. Timeframe: Will it be possible to focus on two

Second General Comment: The prospectus states that new analyses will not be commissioned, and that new scenarios will not be generated. However, would it be possible to show the sensitivities of energy production and consumption under different 'what if' scenarios of temperature change, precipitation change, energy demand, technological change, etc.?

Edison Electric, William Fang

EEI is the association of U.S. shareholder-owned electric companies, international affiliates and industry associates worldwide. EEI's U.S. members serve more than 95 percent of all customers served by the shareholder-owned segment of the industry, generate more than 70 percent of all electricity in the country, and serve nearly 70 percent of all ultimate customers in the nation. EEI also has long been a participant in matters related to climate change science and its assessments, particularly as observers to the Framework Convention on Climate Change sessions of its Conference of the Parties and its Subsidiary Body for Scientific and Technological Advice and to the Intergovernmental Panel on Climate Change sessions.

We note that while the "Proposed Timeline" for this Prospectus and for a September 27, 2005, "SAP 4.5

Enclosed are EEI's comments on the draft Prospectus in accordance with the "Instructions." If you have any questions about our comments, please contact me at (202) 508-5617 or Eric Holdsworth, EEI's Director of Climate Programs, at (202) 508-5103.

(General Comments) We understand that the Climate Change Science Program's (CCSP) Strategic Plan has called for 21 Synthesis and Assessment Products (SAPs) over a four-year period. However, we further understand from the draft Prospectus that an April 2005 report by the General Accounting Office (GAO) contended that the original list of "21 SAPs do not satisfy" the "requirement" of section 106 of the Global Climate Research Act of 1990 for "periodic assessments of implications of global change on various systems and resources" in the U.S. (p. 1). Accordingly, the draft Prospectus reports that the CCSP added, as of July 15, 2005, a SAP 4.5 to its list of 21 assessment areas.^[Footnote 1] While such a SAP could be beneficial, we have several general concerns.

First, the draft contains a general statement that the SAP “will summarize the current knowledge base about possible effects of global change on energy production and use” in the U.S., with no further elaboration, including no explanation or discussion of the purpose or objective of such a summary (p. 1) (emphasis added). Moreover, it is unclear what is intended by the term “global change,” as there is no explanation

thereof. This term is defined in the 1990 Act,[\[Footnote 2\]](#) but it is also defined differently in Article 1 of the Framework Convention on Climate Change (FCCC).[\[Footnote 3\]](#) While this draft Prospectus makes no reference to either definition, since this SAP is being prepared in furtherance of the 1990 Act we assume that that definition would apply. However, the draft Prospectus does not explain how such a broadly defined global term applies to “energy production and use” solely in the U.S. and the “effects of global change” thereon. Indeed, in some respects the FCCC definition may be more appropriate, but is not likely to apply because of the 1990 Act definition. In any event, there should be a reference to the definition and an explanation as to how it applies regionally to the U.S.

Second, we are concerned that the draft Prospectus is rather negative as to what is available from various sources to produce a credible and worthwhile SAP 4.5 that, according to the CCSP guidelines, not only “will support” “informed discussion and decisions by policymakers, resource managers stakeholders, the media, and the general public,” but also “help define and set the future direction and priorities” of the CCSP Program.

The initial “scoping process” of the draft Prospectus did not have an auspicious start, which the draft states was “completed in September 2005” (p. 1). Apparently that is a reference to the “SAP 4.5 Stakeholders Workshop” held on September 27, 2005, at a Bethesda, Maryland hotel for the purpose of obtaining “Stakeholder Contributions to Discussions of the Draft Prospectus.” The written materials for that workshop, under the heading **“PROPOSED APPROACH AND ANALYSIS,”** explained what was planned for the SAP and asked several questions as follows:

SAP 4.5 will not commission new analyses, although it is likely to include new syntheses of available knowledge and data. Likewise, it will not develop climate change scenarios, instead drawing from the report of SAP 2.1 and other CCSP sources. Its focus will be on possible energy sector impacts of global climate, including a characterization of current uncertainties and research priorities for reducing uncertainties (where feasible through research) as a basis for informing decision-making. Although ideally it would quantify impacts under different scenarios for regional climate change and associated uncertainties, given limited data and knowledge, it is likely to emphasize vulnerabilities to impacts and general levels of confidence for statements about concerns. It will also identify where research could reduce uncertainties about vulnerabilities, possible impacts, and possible strategies to reduce impacts and

increase adaptive capacity.

Questions:

- Who has carried out research and assessment on issues related to effects of global change on energy production and consumption?
- How good is the current knowledge base as a foundation for conclusions about these issues?
- To what degree is use of this knowledge base by SAP 4.5 likely to be affected by compliance with the Information Quality Act?
- What are the most important questions to pursue in investigating available knowledge?
- How should the SAP author team collaborate with other experts?

(Emphasis added.)

Unfortunately, attendance at the workshop was merely one stakeholder, namely, an EEI representative. Although our representative attempted to be responsive to these questions, the stakeholder "contribution" was limited, and thus it was not a particularly useful workshop. Of course, we do not know why it was not well-attended. Nevertheless, while the "scoping process" may be called "completed" in a technical sense, it certainly was not "completed" from a substantive standpoint. In short, it did not answer the above questions.

Third, despite a lack of response to the above questions, section 1.2 of the draft Prospectus states that this "product will summarize the current knowledge base about possible effects of global change on energy production and use" in the U.S. and that the "process" for preparing the "report will include a survey and assessment of the available literature," but then states that such "literature is rather limited and in many cases in the form of reports that were not peer-reviewed" (p. 1) (emphasis added). However, there is no explanation of the basis for that statement. The section states that it will also "include identification and consideration of relevant studies" by the CCSP and other federal agencies, as well as "consultation with stakeholders such as the electric utility and energy industries" (emphasis added). Thereafter the draft Prospectus includes a substantial portion of the paragraph, quoted above, that was presented at the September workshop, but without the questions.

The draft Prospectus also adds that the SAP 4.5 "content. . . will include attention" to a list of "issues" in the draft (pp. 2-3). While this list holds some promise, the word

"attention" leaves one with significant uncertainty as to what extent and detail those "issues" will be substantively addressed in the final report. Moreover, the list of issues seems to be only examples and fails to convey some degree of assurance that this list and possibly more will be actually addressed in the final report.

There is even greater uncertainty and vagueness conveyed by the rather negative statements about the limited availability of "literature," and that even in the case of "relevant studies carried out in connection" with unspecified CCSP and other federal "programs," they are only to be identified and considered. Further, in section 1.2, as noted above, the draft indicates that the "process. . . will include. . . consultation with stakeholders such as the electric utility and energy industries" as well as others. However, in section 4 of the draft, such participation by stakeholders appears to be limited to 1) the unproductive "scoping process," 2) this 30-day process of comment on this draft and 3) comments "on the product" during a future "public comment period." There is no real indication of how and when such stakeholder "consultations" are to be planned and undertaken by the authors during the preparation of the SAP and its various drafts. A discussion of the "Drafting Process" in section 5 of the draft does not really inform us about such "consultation" or the process as a whole.

As to the issue of developing "climate change scenarios," the draft states, also as noted above, that it will not develop them, but "instead" the SAP will draw from SAP 2.1" and "other" unidentified "CCSP sources" (p. 2). While we are not necessarily supportive of the development of scenarios, last September at least the scoping paper indicated that but for the "limited data and knowledge," the SAP would "ideally. . . quantify impacts under different scenarios for regional climate change and associated uncertainties" (emphasis added).

We understand the SAP to be about "global" climate "effects" on energy production and use and not about climate change effects regionally – which we understand are difficult to ascertain based on current knowledge – and we are not convinced that either the Department of Energy (DOE) and its national laboratories or the Intergovernmental Panel on Climate Change is ready to develop "scenarios for regional climate change." Nonetheless, we again observe a rather negative view of the drafters of this Prospectus on the availability of data, studies, etc. In addition, it is unclear from the draft or the scoping paper how and to what extent SAP 2.1 and those "other" sources will substitute for such scenarios.

Indeed, at this stage we cannot evaluate the significance

and relevance of relying on the SAP 2.1 report, which according to its January 28, 2005, draft Prospectus, is scheduled for review of "Draft #2" this month, for "CCSP interagency committee" review and processing in June, and for final posting on the "CCSP web site" in August. We do not know whether that schedule is still current or whether it has slipped. More importantly, we do not understand how the authors of this SAP can commit now to relying on a SAP that is not complete and that calls for an update of "scenarios of greenhouse gas emissions and atmospheric concentrations," which, according to the January 28, 2005, draft Prospectus for SAP 2.1, will consider four "stabilization levels" as a "basis for the stabilization scenarios." [Footnote 4]

In short, we are concerned about whether this SAP 4.5 will provide a meaningful synthesis and assessment of the "effects of global change" on energy production and consumption because of what we perceive to be a rather negative approach to the availability of valuable sources that are to contribute to the SAP and because it is inappropriate for this SAP to rely on a SAP that is not yet completed and that could be quite controversial. We urge that the draft be revised to explain more fully what and how those sources are and how and to what extent there will be meaningful "consultation" by the authors with stakeholders such as the electric power sector.

Second General Comment

The draft Prospectus explains that DOE has the lead agency responsibility for the SAP 4.5, which we welcome (p. 1). According to the CCSP Guidelines for the SAPs, the lead and coordinating authors are "responsible for producing" the reports, and the authors are to be "scientists or individuals with appropriate technical expertise appropriate to the product" and may "be drawn from within or without the Federal government." In the case of this draft Prospectus, the listed coordinating author and all of the other listed authors apparently are to be drawn solely from several DOE national laboratories. Accordingly, the draft Prospectus states that "SAP 4.5 will be prepared and authored by staff" from these laboratories, "drawing on their own expertise and knowledge basis." The Prospectus adds that they will also draw upon "other knowledge bases, including those within energy corporations and utilities, consulting firms, non-governmental organizations, State and local governments, and the academic research community" (pp. 4-5). In addition, "DOE national laboratory staff" will also be contributors.

Although section 3 of the draft Prospectus strongly suggests that the authors have been selected, Appendix A of the Prospectus is titled "Bios for Potential Lead Authors," which suggests that the listed authors may not

have been selected, but only proposed (emphasis added). Nevertheless, we have several concerns.

First, we question such heavy reliance on the selection of authors solely from the national laboratories. We recognize that the laboratories generally have a broad range of expertise relied upon by many. However, we question why the selection of authors does not include scientists from any other research organizations or others from the private sector.

Second, as you know, electricity affects all other economic sectors.^[Footnote 5] However, while our review of the brief "Bios" indicates that these national laboratory individuals appear to be well-qualified researchers, most do not seem to have a background in, or are currently involved with, such matters as assessment and research related to the demand for electricity, the generation and transmission of electricity, and related energy issues significant to our industry and relevant in any consideration of the "effects of global change" on the generation of power and the use by electricity customers.

Third, several of the listed authors appear to be heavily involved in administrative activities at the labs, which would likely ensure that the authorship of various chapters of SAP 4.5 will indeed fall heavily on "DOE national laboratory staff" and raise questions about the extent of the involvement of these authors.

In short, while these may all be well-qualified scientists, there is an overemphasis on the national laboratories as a source of authors, particularly those who may be overcommitted to administrative duties so as not to be able to devote sufficient time and effort to the SAP 4.5, and there is no inclusion of authors from the private sector, including the electric utility sector. We urge reconsideration of the author selection process.

Footnotes

Footnote 1

Section 106 requires that the federally established Committee on Earth and Environmental Sciences, as required by the Act, prepare at least every four years and submit to the President and Congress "an assessment," which, among other matters, "analyzes the effects of global change on. . .energy production and use." 15 U.S.C. § 2936.

Footnote 2

Section 2(3) of the 1990 Act defines the term "global change" to mean "changes in the global environment"—not just in the U.S. or regionally – "(including alterations in climate, land productivity, oceans or other water resources, atmospheric chemistry, and ecological systems) that may alter the capacity of the Earth to sustain life." 15 U.S.C. § 2921(3).

Footnote 3

Article 1 of the FCCC defines "climate change" to mean "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over a comparable time period."

Footnote 4

On March 7, 2005, EEI commented on the draft Prospectus for SAP 2.1 and expressed some significant problems with that draft Prospectus. We do not know how or to what extent the CCSP addressed our concerns.

Footnote 5

For example, the Executive Summary of the Energy Information Administration's (EIA) December 2005 report on Emissions of Greenhouse Gases in the United States 2004 "divides energy consumption into four general end-use categories: residential, commercial, industrial, and transportation" and, in the case of "[e]missions from electricity generators" that provide electricity to each such sector, allocates them "in proportion to the electricity consumed" in and "losses allocated" to each sector (p. xii).

Franco, California Energy Commission

First General Comment:

Since the Synthesis and Assessment Product (SAP) 4.5 is not expected to include new analyses of data but to summarize and integrate existing information, I want to call to your attention some of the studies performed by or for the Energy Commission in the area of climate change and energy supply and demand. These studies are:

Baxter, Lester W., and Kevin Calandri. 1992. "Global warming and electricity demand: A study of California."

Energy Policy 20 (3), March: 233*244.

Mendelsohn, Robert. 2003. ["The Impact of Climate Change on Energy Expenditures in California."](#) Appendix XI in Wilson, T., and L. Williams, J. Smith, R. Mendelsohn, Global Climate Change and California: Potential Implications for Ecosystems, Health, and the Economy. Consultant report 500-03-058CF to the Public Interest Energy Research Program, California Energy Commission, August.

Georgakakos. K., et al. 2005. Integrating Climate-Hydrology Forecasts and Multi-Objective Reservoir Management for Northern California. EOS Vol. 86, No.12, 22 March.

Vicuña, S., R. Leonardson, J. A. Dracup, M. Hanemann, L. Dale. [Climate Change Impacts on High Elevation Hydropower Generation in California's Sierra Nevada: A Case Study in the Upper American River.](#) 2006. Final white paper from California Climate Change Center, publication # CEC-500-2005-199-SD.

Franco, G., A. Sanstad. 2006. [Climate Change and Electricity Demand in California.](#) Final white paper from California Climate Change Center, publication # CEC-500-2005-201-SD, posted: February 27.

The last two papers were peer-reviewed using a process developed and implemented by the University of California Office of the President.

Other studies partially funded by the Energy Commission designed to better understand how adaptation to current levels of climate variability could be help the state to cope or adapt to long-term climate change include:

Alfaro, A., A. Gershunov and D. Cayan, 2005: Prediction of summer maximum and minimum temperature over the central and western United States: The role of soil moisture and sea surface temperature. J. Climate,

Alfaro, A., A. Gershunov, D. Cayan, A. Steinemann, D. Pierce and T. Barnett, 2004: A Method for Prediction of California Summer Air Surface Temperature. EOS, 85(51), 553, 557-558.

Voisin, N., A. F. Hamlet, L. P. Graham, D. W. Pierce, T. P. Barnett, and D. P. Lettenmaier, 2005: The role of climate forecasts in western U.S. power planning, Journal of Applied Meteorology.

Davis, T. D., Gaushell, D., Pierce, D. W., and Altalo, M.

Michel, Ing.-Büro Michel

Specific Comments

Page 2, line 18-21: The draft prospectus seems to imply that SAP 2.1 will develop climate scenarios, whereas the SAP 2.1 prospectus defines its role of assessing emission

Edison Electric, Holdsworth and Fang

Haut, Houston Advanced Research Center

Kheshgi, ExxonMobil Research & Engineering Company

Edison Electric, Holdsworth and Fang

It appears that the "Proposed Timeline" in the draft has slipped and needs to be revised (p. 8). For example, the timeline states that the "due date for SAP 4.5 is the second quarter of FY 2007 (March 31, 2007)" (*id.* at line 3). However, the proposed timeline states that this 30-day comment period would be in the "December 2005-February 2006" time frame with the "[p]rospectus

revision and approval" scheduled for "March 2006" and the "[p]reparation of a first draft by Lead Authors," etc. scheduled for the March-June 2006 time frame (*id.* at lines 8-12). Moreover, the timeline specifies that the third draft of the SAP is due in the "February-March 2007" time frame (*id.* at line 17), and thereafter must be reviewed by the "CSSP Interagency Committee," scheduled for "April 2007" (*id.* at line 18), and approved by the National Science and Technology Council (NSTC), which is scheduled for "June 2007" (*id.* at line 19). Thus, the above "due date" is clearly not achievable, and the timeline in the draft needs to be revised. That revision should take into consideration the late entry of last July and, despite our concerns and comments, projected reliance on the SAP 2.1 report, including the status and projected availability of that report.